Labeeb Hasan Zaker

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Education and Awards

McMaster University **Hamilton, ON**
Bachelor of Engineering in Mechatronics Engineering, CGPA: 3.84/4.0, *Expected Graduation: April 2022*

Honors: Dean's List (April 2019, April 2020) , Hack The Valley IV 2020 Best Use of MongoDB cluster.
Related Coursework: Engineering Computation, Programming for Mechatronics, Data Structures and Algorithms.

Work Experience

McMaster Eco-Car **Hamilton, ON**
Connected and Autonomous Vehicle Developer *September 2019 - Present*

Assisted with vehicle development process to design and integrate automated system; such as automated cruise control and sensor fusion.

- Implemented **Sensor Fusion** technology in order to receive data from car sensors using **MATLAB**.
- Collaborated in a team of **15** engineers from various streams to develop an Adaptive Cruise Control algorithm using **MATLAB**.
- Developed an adaptive Python 3 program that can detect obstacles, road conditions, and lane markers using **OpenCV**, **NumPy**, **Matplotlib** libraries.
- Increased accuracy of computer detection results by implementing data processing on arrays of integer coordinates to improve lane detection results by **75%**.
- Developed a visualization of detection results of road lanes and obstacles on various videos and images.

Personal Projects

RateYourLandlord (Winner: Best Use of MongoDB Cluster) **Web Application**
HTML5, CSS 3, JavaScript, Node.JS, Express.JS, MongoDB *github.com/zakerl/rate-my-landlord-webapp*

Orchestrated a team of 5 to develop a web-based application for tenants to post reviews about landlords at desired locations.

- Integrated **Google Maps API** to add multiple markers, improving search efficiency by **13%**.
- Developed landlords and reviews schema models using **MongoDB**, to create and store around **125** landlords and reviews.
- Implemented an algorithm using **node-geocoder** to extract longitude, latitude and addresses of locations.

AlgoVisualiser **Web Application**
React.js, CSS3, JavaScript, Node.js, Express.js *github.com/zakerl/AlgoVisualiser*

Designed a Sorting Algorithms Visualiser platform to animate various sorting algorithms.

- Implemented **useEffect** hook to update the website based on user interaction.
- Constructed a random array generator using **useState** hook and an **input slider** to generate an array of bars between **3** and **80**.
- Developed animations using **JavaScript** and **CSS3**, rendered by **React** depending on sorting algorithm, improving render speed by **5%**.

Pacemaker **Embedded Systems Software**
React.js, CSS3, JavaScript, Node.js, Express.js, Serialport.js, Firebase *github.com/zakerl/pacemaker-project*

Designed User Interface that takes inputs from user and outputs egram for visualisation.

- Developed UI using **React.js** that allows users to configure available pacing modes.
- Implemented **get** and **post** requests to send data through the backend using **Javascript Fetch API**.
- Configured serial communication to pass input data to the board using **Serialport.js** and **Node.js**, resulted in **100%** accuracy.

Mac Carpool **Web Application**
React.js, CSS3, JavaScript, Node.js, Express.js, Stripe.js, MongoDB *github.com/zakerl/DeltaHacksVI-1*

Collaborated in a team of **4** to build a car-pooling web application for people commuting to or from McMaster.

- Integrated **Stripe.js** to provide users with a secure gateway for payment, thus increasing security by **10%**.
- Improved interactivity using **MongoDB** to create a search bar that filters available rides based on input.
- Implemented login and register features using **MongoDB** and **useState** hook to allow users to login and save personal data.

Skills

Programming Languages: JavaScript, C/C++, Python, MATLAB HTML5, CSS3, MongoDB, Git and LaTeX.
Frameworks: Node.js, Express.js, React.js, Bootstrap 4, Serialport.js, Google Maps API, Rest API and jQuery.